P.O. File

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII
999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

Ref: 8WM-GW

MEMORANDUM

DATE: October 6, 1994

TO: Dan Jackson, 8WM-DW

FROM: Rich Muza

SUBJECT: Ground-Water Production Potential of Geological Units at the Carbon County UCG, Inc. Underground Coal Gasification Project, Carbon County, Wyoming

I have reviewed the applicable sections of Volumes 2 and 3 of the R & D License Application for the subject project in order to determine the ground-water production potential of the geological units at the site. A determination as to the use of the sandstones as a source of potable water is based on a public water supply of 25 persons at 100 gpd per person or a total of 2500 gpd required.

HYDROGEOLOGY

Ground water at the site is present within the Fort Union Formation, the same formation in which the coal seams are located. The Fort Union is comprised principally of shales or claystones with fine-grained sandstones and coals. The strata at the site dip 60° SW into the Great Divide Basin. The Fort Union is overlain by a thin veneer of recent deposits (ie., alluvial fans, fine alluvium of Separation Creek, and colluvium). Local ground-water flow patterns are to drainage areas and an upward vertical gradient is suggested by site-specific hydraulic head data from wells completed at within different facies.

Aquifer testing was performed utilizing single-well drawdown-recovery tests. An analysis of the data acquired from these tests indicate that the transmissivities of the sandstone facies are extremely low with a high value of 0.0062 gpd/ft calculated. Converting the transmissivity values to hydraulic conductivity values, once again, an analysis of the data indicate that the hydrualic conductivities of the sandstones are extremely

low with a high value of 7 X 10^{-7} cm/sec determined. Storage coefficients were determined from the testing but single-well test data are not very reliable in determining this aquifer property.

CONCLUSIONS

Based on the site-specific data, this area is not a water-rich environment. It is estimated that the annual ground-water recharge rate for the area is less than 1 in. This coupled with the aquifer properties determined through on-site testing does not suggest a viable aquifer for potable water supply. Projections using the Theis Equation and the highest transmissivity value provided above and a site-specific storage coefficient value as input data indicate that excess drawdowns (verse saturated thickness) will occur at a discharge rate of 2500 gpd in less than a month of production. Therefore, based on available data, at the site the Fort Union Formation sandstones are not deemed to be an aquifer capable of supplying potable water to a public water system.

If you should have any questions, please contact me at x1125.

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DEC -2 1994

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Mr. William L. Garland
Administrator, Water Quality Division
Wyoming Department of
Environmental Quality
Herschler Building
122 West 25th Street
Cheyenne, Wyoming 82002

RE: Public Notice requirement for UIC Program revision request.

Dear Mr. Garland:

On October 3, 1994, EPA received a copy of the application for a research and development (R&D) license filed by Carbon County UCG, Inc. for a Class III injection well in-situ coal gasification project.

EPA responded in an interim response letter dated November 9, 1994, that it would concur with the State should the water in the proposed injection zone be classified as Class V Mineral Commercial Groundwater of the State (Class V Water) under Wyoming Department of Environmental Quality Water Quality Division Chapter VIII Quality Standards for Groundwaters of Wyoming Section 3(d)(8)(b). The interim response letter also noted that the requirements for public participation must be met before EPA could consider approval of this aquifer exemption request as a program revision under 40 C.F.R. §145.32.

EPA has since become aware that State of Wyoming Research & Development License No. 17RD was issued for this project on October 24, 1994. It has been noted that pursuant to Special Condition 37 of this R&D license, subsurface mining activities cannot start until EPA has finalized the federal aquifer exemption request.

EPA cannot finalize any aquifer exemption request for this project until public notice requirements are met. In accordance with 40 C.F.R. §144.7(b)(3), and with the Memorandum of Agreement between the State of Wyoming Department of Environmental Quality Water Quality Division and the U.S. EPA Region VIII (MOA), the determination of Class V Water by the State requires that an opportunity is provided for public participation in the classification process. In order for EPA to consider any program revision request for classifying the ground water as Class V

Water for this project, affidavits of notice to the public and copies of comments related to the ground water classification, pursuant to Appendix A of the MOA, must be submitted.

Aquifer designation receives a very high level of importance in the UIC program. Because of the implications of exempting certain aquifers from protection as USDWs, the opportunity for public participation is a required component of the aquifer exemption process.

If you have any questions or comments, please call or have your staff contact Dan Jackson of my staff at (303) 294-7615.

Sincerely,

Max H. Dodson
Director
Water Management Division

cc: D. Hemmer, Director, WY DEQ
J. Strohman, WY DEQ WQD
R. Lucht, P.E., WY DEQ WQD